

# DOE's Vehicle Technologies Office

TI-001: Technology Integration Project summary – June 19, 2018



U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy

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TECHNOLOGY INTEGRATION TEAM

# How Does Technology Integration Fit into VTO?

## Vehicle Technologies Office

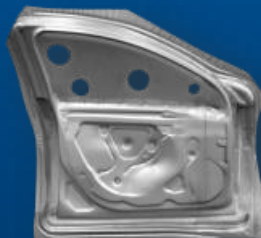
### Electrification



### Advanced Combustion Systems and Fuels



### Materials Technology



### Energy Efficient Mobility Systems



### Technology Integration



*VTO develops advanced transportation technologies to:*

- ✓ Improve energy **efficiency**
- ✓ Increase domestic energy **security**
- ✓ Reduce operating **cost** for consumers & business
- ✓ Improve global **competitiveness** of US economy

# Technology Integration (TI) Program Elements

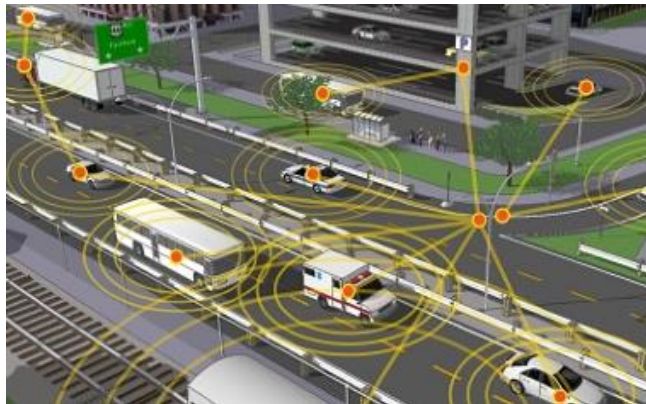
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- *Data and Systems Research*
  - *Information and Tools*
  - *Technical Assistance and Training*
  - *Clean Cities coalitions and Partnerships*
  - *Financial Assistance*
- Regulatory Activities/State and Alt Fuel Provider Fleets
- **Advanced Vehicle Competitions**



# TI - Technical Portfolio

## Light-, Medium-, and Heavy-Duty Vehicles



## Energy Efficient Mobility Systems and Technologies

## Alternative Fuel Infrastructure



# Core Activities Related to Technology Integration

## Financial Assistance

Competitively-awarded, cost-shared projects – Living Labs to inform future research

## Information & Tools

Online calculators, station locators, case studies mobile apps using objective data (includes statutorily required activities – AFDC and Fuel Economy Guide)

## Technical Assistance & Training

Online and in-person  
Boots-on-the-ground experts, technical forums, user groups



## Partnerships

National network of local community and business partners that extend VTO reach with a consistent message

# Information and Tools

**www.fueleconomy.gov**  
the official U.S. government source for fuel economy information

**Top 1%**  
of all Federal sites

**#18**  
of 2100

**26.5M**  
views/month

**User**  
agreements



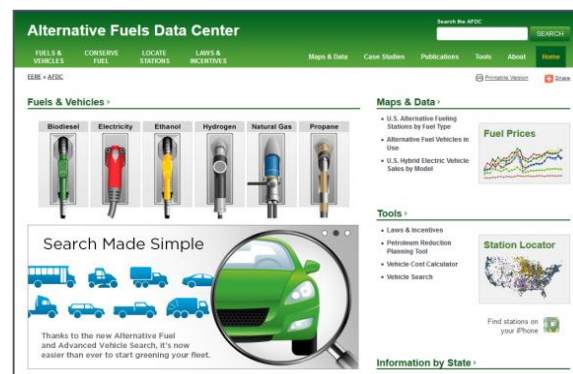
**Alternative Fuels Data Center**

**Top 13%**  
of all Federal sites

**#276**  
of 2100

**444K**  
views/month

**User**  
agreements



Data based on monthly page views from 7/26/2016 to 8/24/2016 and compared to data gathered about Federal Sites on [analytics.usa.gov](https://analytics.usa.gov). See <https://analytics.usa.gov/#explanation> for details on how analytics.usa.gov tracks data on how people are interacting with the government online. AFDC uses Google Analytics for web traffic statistics and FuelEconomy.gov uses Urchin.

# Technical Assistance

## Tiger Teams

- Incident investigations (evaluate technology failures)
- Capture early adopter lessons learned, develop best practices
- Address unforeseen permitting and safety issues
- Identify technology gaps in the field to inform research priorities



## Technologist in Cities Pilot

- Embedded technical expert
- Connects to SMART Mobility
- Supports DOE/DOT MOU



## Technical Response Service (TRS)

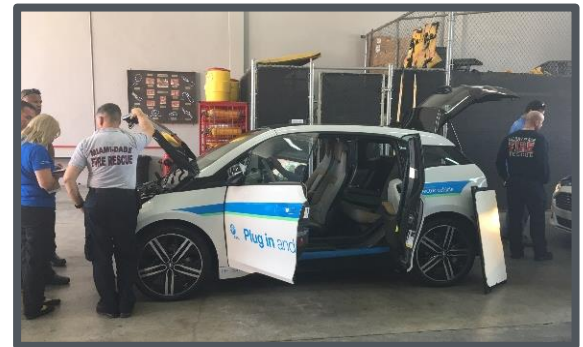
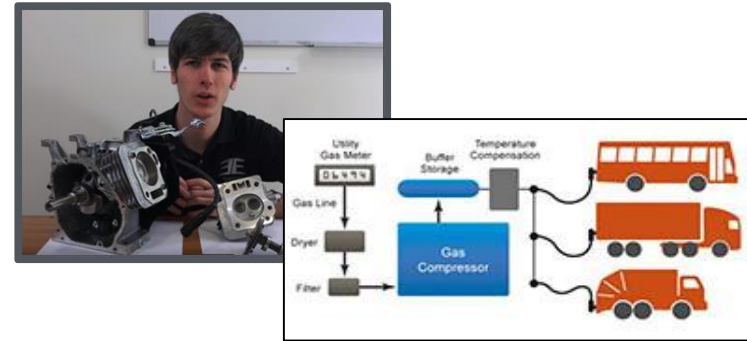
- Information portal to rapidly connect stakeholders with breadth of expert data, tools, resources, and Clean Cities coalitions
- Individualized assistance for research and making informed decisions
- Expert resource for quick turnaround VTO information needs





# Training

- Technical forums, workshops, and user groups
- Clean Cities University (CCU): On-line courses related to advanced vehicle fuels and technologies, and skillful use of VTO tools, data, and information resources
- AFV workplace safety training
- First responder, code official, and fire and safety personnel training
- Clean Cities Workforce Development Program: College interns learn about VTO technologies, mentored by Clean Cities coalitions





# Locally-based Public-Private Partnerships

Nearly 100 *Clean Cities coalitions* with thousands of stakeholders provide a *coordinated “boots-on-the-ground” approach* and significantly *extend VTO reach* with a *consistent message*



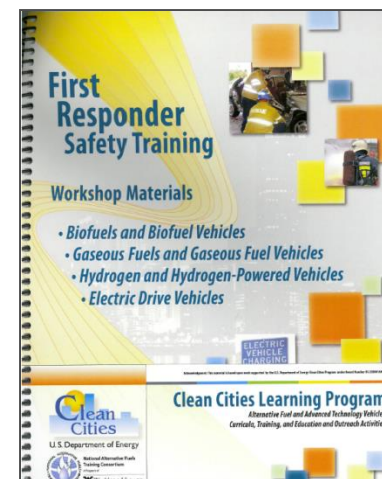
# Key Success Factor: Leveraging People and Resources

- Local and ***community-based coalitions***/public-private partnerships
- Strong ***industry and end-user*** partnerships
- ***National laboratory expertise*** in data collection and analysis
- Close coordination with other ***Federal agencies and State/Regional/Local governments***



# Financial Assistance – historical project funding

- Community Readiness and Policy Development
- Infrastructure Development (fueling/charging stations)
- Vehicle Deployment (optimization & incremental cost)
- Curriculum Development (safety and technical courses)
- High-Visibility Demonstration projects
- Hands-on Fleet and Driver Experience projects
- Aggregate purchasing to create economies of scale



# Key Questions that Tech Integration Seeks to Answer

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- As new technologies enter the market...
  - How effective are they?
  - Are there critical challenges requiring additional research to overcome? What are they?
  - What improvements are needed?
- Which technology is best to address different issues and are most cost effective?
- What types of data need to be gathered on new vehicle technologies?



# Take note of Key Project Elements

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- Projects include a wide variety of valuable technology integration initiatives
- New transportation mobility efforts are emerging
- Tools/data continue to be improved and expanded and serve as backbone for many third-party activities
- Stakeholders are getting help solving complex problems through expert technical assistance, training, and teaming up with experienced partners
- Strong network of local Clean Cities coalitions and industry partners is essential to success

# FY 2016 VTO Program Wide - Area of Interest 1

## *EV Everywhere Plug-In Electric Vehicle Local Showcases*

The objective of AOI 1 is to promote and demonstrate PEV use by establishing local showcases that provide a hands-on consumer experience and in-depth education in a conveniently located, brand-neutral setting.

3 Projects Awarded  
Total DOE Funding: \$2,443,427  
Cost Share Requirement: 50%



### 1. **American Lung Association**

*Project Title: Midwest EVOLVE (Midwest Electric Vehicle Opportunities: Learning, Events, Experience)*

### 2. **Forth**

*Project Title: Northwest Electric Showcase*

### 3. **Plug In America**

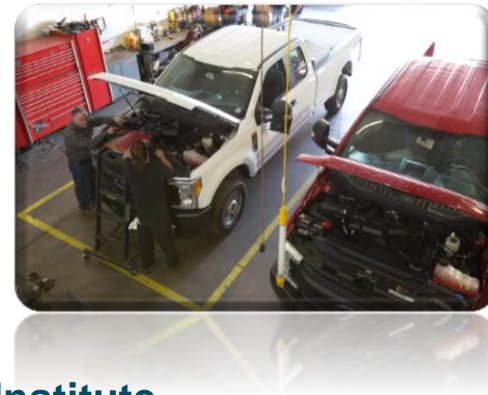
*Project Title: Advancing PEV Adoption in New England*

## FY 2016 VTO Program Wide - Area of Interest 10

### *Alternative Fuel Vehicle Workplace Safety Programs*

The objective of AOI 10 is to provide safety training and guidance related to maintenance and garage facility upgrades and building modifications that will support the use of alternative fuel vehicles (AFVs). This AOI is focused only on facilities with EPACT defined natural gas, propane, and hydrogen vehicle refueling infrastructure.

2 Projects Awarded  
Total DOE Funding: \$1,499,965  
Cost Share Requirement: 10% or 20%



#### **1. Institute of Gas Technology / Gas Technology Institute**

*Project Title: Training for Cost-Effective Code-Compliant Maintenance Facilities*

#### **2. Marathon Technical Services USA Inc.**

*Project Title: Safety Training and Design, Permitting and Operational Guidance for Garage Facilities Maintaining and Parking Natural Gas, Propane and Hydrogen Vehicles*

## FY 2016 Multi-topic - Area of Interest 3

### *Alternative Fuel Vehicle Community Partner Projects*

The objective of this Area of Interest is to fund projects that would accelerate the use of commercially available electric drive and alternative fuel vehicles, and supporting infrastructure technologies, through community-based partnerships among state and local governments and the private sector.

2 Projects Awarded  
Total DOE Funding: \$8,532,313  
Cost Share Requirement: 50%



#### 1. **PacifiCorp**

*Project Title: WestSmartEV: Western Smart Plug-in Electric Vehicle Community Partnership*

#### 2. **Gas Technology Institute**

*Project Title: U.S. Fuels Across America's Highways - Michigan to Montana (M2M)*



## FY 2017 Vehicle Technologies Deployment – AOI 2

### *“Living Labs” Energy Efficient Mobility Systems Projects*

## POSTERS

The objective of this area of interest is to develop and implement projects and tools that demonstrate and assess the return on investment (ROI) of energy efficient “smart” mobility systems that holistically reduce energy consumption while delivering the benefits of new mobility technology.

3 Projects Awarded  
Total DOE Funding: \$4,807,068  
Cost Share Requirement: 50%



### 1. Rensselaer Polytechnic Institute

*Project Title: Collaborative Approaches to Energy-Efficient Logistics in the Albany - New York City Corridor*

### 2. Pecan Street Inc.

*Project Title: Electric Last Mile Project*

### 3. City of Seattle Department of Transportation

*Project Title: Making the Business Case for Smart, Shared, and Sustainable Mobility Services*